

WHAT IS CLAIMED IS:

1. A method of processing non-fetal donor tissue to obtain an enriched population of progenitor cells comprising:
  - (a) providing non-fetal donor tissue that would be considered unsuitable for an organ transplantation; and
  - (b) processing said non-fetal donor tissue to obtain an enriched population of progenitor cells.
- 10 2. The method of claim 1 in which the non-fetal donor tissue, which would be considered unsuitable for an organ transplantation, is obtained from a donor whose heartbeat has ceased.
- 15 3. The method of claim 2 in which the donor tissue is obtained within about six hours after the heartbeat ceased.
- 20 4. The method of claim 2 in which the donor tissue is obtained within about three hours after the heartbeat ceased.
5. The method of claim 2 in which the donor tissue is obtained within about one hour after the heartbeat ceased.
- 25 6. The method of claim 1 in which the donor tissue is cooled.
7. The method of claim 1 in which the donor tissue is cooled to about 4 °C.
- 30 8. The method of claim 2 in which the donor is a neonate, an infant, a child, a juvenile, or an adult.
9. The method of claim 2 in which the donor is a pig or a primate.
10. The method of claim 1 in which the donor tissue is selected from the group consisting of adrenal gland, blood vessel, bone marrow, cornea, retina,

islets of Langerhans, bile duct, lens, lung, kidney, heart, gut, ovary, pancreas, prostate, parathyroid, pineal, pituitary, skin, testis, bladder, brain, spinal cord, spleen, thymus, or thyroid.

5 11. The method of claim 1 in which the tissue is liver.

12. The method of claim 2 in which the processing step provides a substantially single cell suspension or an explant.

10 13. The method of claim 13 in which the processing step additionally comprises selecting from the suspension those cells that express at least one marker associated positively or negatively with at least one progenitor cell lineage.

15 14. The method of claim 13 in which the processing step additionally comprises a debulking step, to provide a debulked cell suspension enriched in progenitors exhibiting at least one marker associated with at least one progenitor cell lineage.

20 15. The method of claim 13 in which the at least one progenitor cell lineage includes at least one of hepatic, hematopoietic, stromal, or mesenchymal cell lineage.

16. A method of procuring liver progenitor cells, comprising:

25 (a) providing a non-beating heart donor as a liver tissue source; and  
(b) processing the liver tissue to obtain the progenitor cells.

17. The method of claim 16 in which the donor is a mammal.

30 18. The method of claim 16 in which the mammal is a human.

19. The method of claim 16 in which the progenitor cells have the capacity to develop into hepatocytes, biliary cells, or a combination thereof.

20. The method of claim 16 in which the cells of the donor express at least one of alpha-fetoprotein, albumin, bone sialoprotein, CD14, CD34, CD38, CD90, CD45, CD117, ICAM-1, collagen type I, collagen type II, collagen type III, glycophorin A, or osteopontin.

5

21. A method of providing a tissue having at least one progenitor cell population as a source of progenitor cells, comprising:

(a) providing a donor having a non-beating heart;

10 (b) harvesting the tissue from the donor, the tissue having at least one progenitor cell population; and

(c) processing further the harvested tissue to obtain progenitor cells.

22. A method of processing fetal human tissue to obtain an enriched population of human liver progenitor cells comprising:

15 (a) providing fetal human tissue that would be considered unsuitable for a cell or an organ transplantation; and

(b) processing said fetal human tissue to obtain an enriched population of liver progenitor cells.

20

23. A method of providing a tissue having at least one diploid cell population as a source of diploid cells, comprising:

(a) harvesting a tissue from a donor having a non-beating heart at a time when the tissue is harvested, the tissue harvested being suspected of having at

25 least one diploid cell population;

(b) processing the harvested tissue to obtain a population of cells substantially enriched in diploid cells.

24. The method of claim 23 in which the donor is not a fetus.

30

25. The method of claim 23 in which the donor is a neonate, an infant, a child, a juvenile, or an adult.

26. The method of claim 23 in which the diploid cells include progenitors.

27. The method of claim 23 in which the processing step comprises processing the harvested tissue to provide a substantially single cell suspension.

5 28. The method of claim 27 in which the processing step further comprises separating the substantially single cell suspension into two or more fractions.

10 29. The method of claim 28 in which the separating step separates larger cells from smaller cells, higher density cells from lower density cells, or both.

15 30. The method of claim 29 in which one or more fractions consisting essentially of smaller cells, lower density cells, or both, are further processed to provide a population of cells substantially enriched in diploid cells.

31. The method of claim 30 in which the diploid cells include progenitors that express alpha-fetoprotein.

20 32. The method of claim 31 in which the progenitors include liver progenitors.

33. The method of claim 23 in which the tissue is harvested within about six hours after the heartbeat ceased.

25 34. The method of claim 23 in which the tissue is harvested within about three hours after the heartbeat ceased.

35. The method of claim 23 in which the tissue is harvested within about 30 two hours after the heartbeat ceased.

36. The method of claim 23 in which the tissue is harvested within about one hour after the heartbeat ceased.

37. The method of claim 23 in which the tissue is selected from the group consisting of adrenal gland, blood vessel, bone marrow, cornea, retina, islets of Langerhans, bile duct, lens, lung, kidney, heart, gut, ovary, pancreas, 5 prostate, parathyroid, pineal, pituitary, skin, testis, bladder, brain, spinal cord, spleen, thymus, or thyroid.

38. The method of claim 23 in which the tissue is liver.

10 39. A composition comprising a population of cells substantially enriched in diploid cells obtained by the method of claim 23.

40. The composition of claim 39 in which the diploid cells include progenitors that express alpha-fetoprotein.